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NOTES ON GEOGRAPHIC DISTRIBUTION

Plantae, Ericales, Symplocaceae, *Symplocos falcata* Brand: Distribution extension and geographic distribution map

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Symplocos Jacq., one of the two genera of the family Symplocaceae, comprises 318 species distributed in the Americas, eastern Asia, and Australasia (Fritsch et al. 2008). In Brazil, there are approximately 40 species of *Symplocos* occurring mainly in the Brazilian savanna (*Cerrado*) and Atlantic Rainforest of southern and southeastern Brazil. *Symplocos* can be recognized in Brazil by the following combination of characters: simple, alternate, and estipulate leaves; axillary inflorescences; bisexual or rarely unisexual actinomorphic flowers; a connate calyx and corolla; an androecium with usually numerous and epipetalous stamens; globose or ellipsoid anthers, notably shorter than the filaments; an inferior ovary with three to seven locules; one to four unitegmic ovules; a drupaceous fruit crowned by the persistent calyx.

One of the Brazilian species of *Symplocos* is *S. falcata*, a member of *S.* series *Symplocos*, informal group Neosymplocos (sensu Fritsch et al. 2008). Species of this group are easily recognized by their pubescent filaments (Aranha Filho et al. 2007; Fritsch et al. 2008). Neosymplocos currently contains twelve species growing mainly in Atlantic Rainforest or occasionally in rocky outcrops (*campo rupestre*) of southern and southeastern Brazil (Aranha Filho et al. 2007; 2009).

According to the last revision of Neosymplocos (Aranha Filho et al. 2007), *S. falcata* is limited to the *Serra da Mantiqueira* complex from Caparaó (Espírito Santo and Minas Gerais states) to Campos do Jordão (state of São Paulo), and to the *Serra do Mar* complex from Santa Maria Madalena (state of Rio de Janeiro) to Alto da Serra de Paranapiacaba Biological Reserve (municipality of Santo André, state of São Paulo). This species typically grows in elfin, upper and lower montane rainforests from 200 to 2,400 m altitude (Aranha Filho et al. 2007).

Nonetheless, in 2008 we collected samples of *S. falcata* in an upper montane semideciduous forest fragment (sensu Veloso et al. 1991) at 1,325 m altitude in Itacolomi State Park (PEI), south of *Cadeia do Espinhaço*, municipality of Ouro Preto, state of Minas Gerais. This new record is the first of *S. falcata* outside of *Serra da Mantiqueira* and *Serra do Mar* complexes and extends its distribution range ca. 120 km northwest from *Serra do Brigadeiro* (north of *Serra da Mantiqueira*), which was the most inland record for *S. falcata* until the present (Figure 1). The voucher specimen of the new record is deposited in the herbarium of *Universidade Federal de Ouro Preto* (OUPR 22879).

PEI has elevations from 700 to 1,722 m and an area of 7,543 ha located in the municipalities of Ouro Preto and Mariana between the coordinates 20°22'30" - 20°30'00" S, 43°32'30" - 43°22'30" W (Dutra et al. 2008; IEF 2009). According to Köppen's classification, the climate type in the region is Cwb, with annual rainfall ranging from 1,450 to 1,800 mm and annual average temperature from 17 °C to 18.5 °C (Werneck et al. 2000), but in the winter the temperatures can be negative with high atmospheric humidity (IGA 1995). Its vegetation is composed mainly of rocky

outcrops and semideciduous montane forest (Dutra et al. 2008). Although *S. falcata* grows in an upper montane semideciduous forest in PEI (as previously mentioned), the fragment where we collected it has typical species of upper montane rainforest (Meira Neto et al. 1989; Oliveira-Filho and Fontes 2000), such as *Aniba firmula* and *Nectandra nitidula* (Lauraceae), *Myrceugenia alpigena* and *Myrcia laruotteana* (Myrtaceae), *Araucaria angustifolia* (Araucariaceae), *Clethra scabra* (Clethraceae), *Drimys brasiliensis* (Winteraceae), *Geonoma schottiana* (Arecaceae), *Ludwigia anastomosans* (Onagraceae), *Miconia chartacea* (Melastomataceae), *Podocarpus lambertii* (Podocarpaceae), *Schefflera calva* (Araliaceae), and *Tetrorchidium parvulum* (Euphorbiaceae). Moreover, some families that occur in that fragment, such as Aquifoliaceae, Asteraceae, Cyatheaceae, Lauraceae, Solanaceae, Melastomataceae and Myrsinaceae are significant component of upper montane rainforest vegetation (Oliveira-Filho and Fontes 2000).

We predict that *S. falcata* will be found near Ouro Preto (e.g. municipalities of Barão de Cocais, Belo Horizonte, Itabirito, and Mariana), southeastern *Quadrilátero Ferrífero*. This is because this region is mountainous, with deep valleys and steep slopes which defines the conformation, speed and flow of drainage, and allows the creation of environmental conditions for the development and maintenance of the upper montane rainforest, typical habitat of *S. falcata*.

Among Neosymplocos species, *S. falcata* is characterized by branchlets sparse to densely sericeous / tomentose, hirsute or strigose; young leaves densely sericeous / tomentose or strigose; mature leaves glabrous or glabrate, but always with the blade visible through the indument; bracts and calyx densely ferrugineous-pubescent; young fruit with calyx lobes densely ferrugineous-pubescent; and mature fruit cylindrical or subcylindrical and 8-10 mm long.

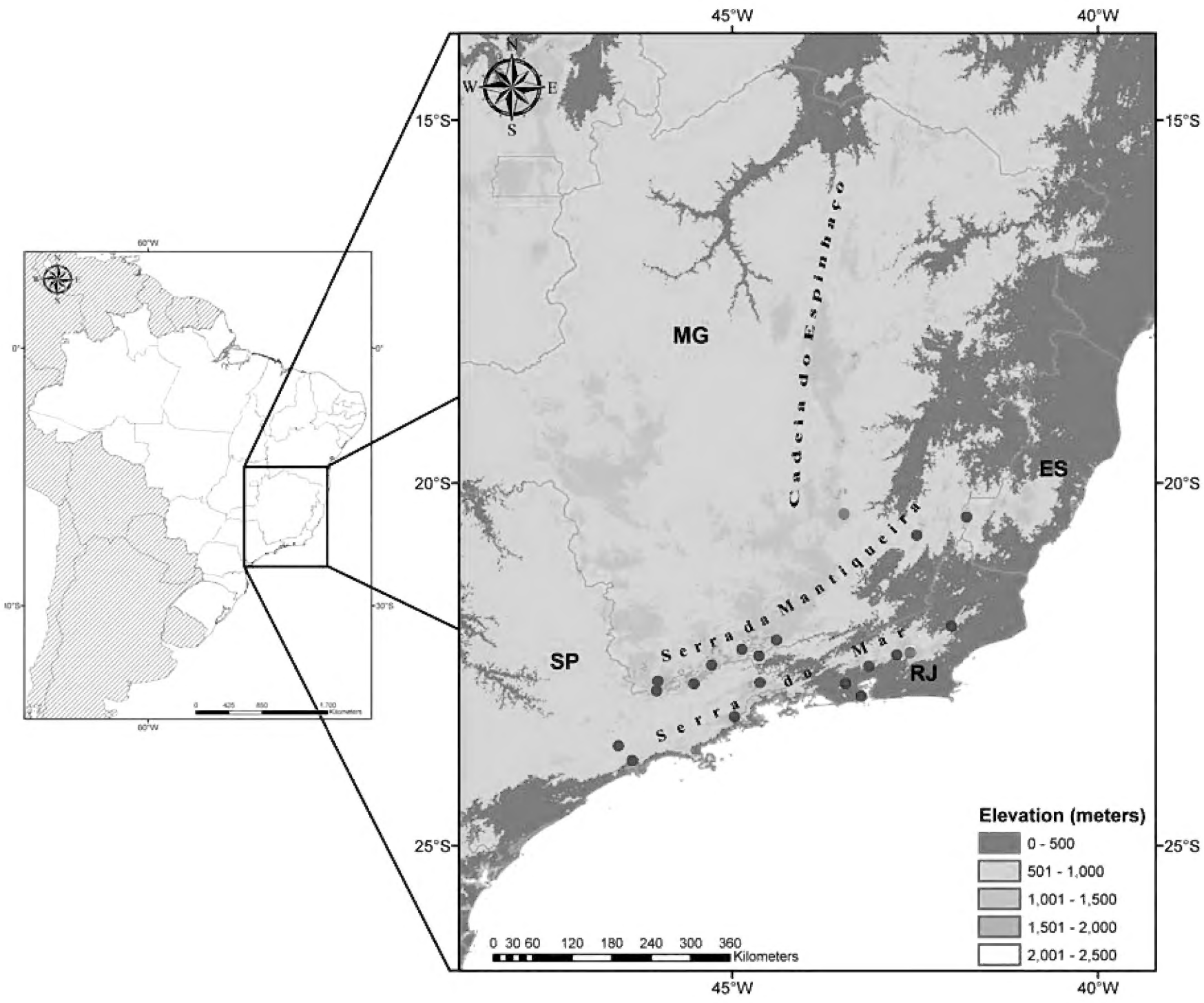

Figure 1. Altitudinal distribution map of *Symplocos falcata*. Brown circles represent the previous known distribution; blue circle represents the type locality; and red circle represents the present record (ES - state of Espírito Santo; MG - state of Minas Gerais; RJ - state of Rio de Janeiro; SP - state of São Paulo).

Both stamen orientation and anther color are important for Neosymplocos taxonomy. Typically, *S. falcata* has stamens that are erect to slightly curved inward with greenish to whitish anthers (Aranha Filho et al. 2007). Specimens from PEI, however, have stamens that are strongly curved inward and yellowish anthers, characteristics otherwise unknown to the species. These floral variations are unlikely to result from environmental factors because there would be differences also on the inflorescence structure and/or leaf morphology, but *S. falcata* from PEI matches *S. falcata* collected elsewhere in all other morphological aspects. Due to the specificity between flowers and pollinators, floral differences within a species or among phylogenetically related species are almost exclusively a genetic variation and not environmentally influenced (Cardim et al. 2001). Thus, the floral differences we found suggest that the population of *S. falcata* from PEI is genetically different from other populations of this species.

Alternatively, the isolated pattern of floral variation in the population from PEI may be nearly a result of sampling error. In Neosymplocos, both stamen orientation (erect to strongly curved inward) and anther color (whitish, greenish or yellowish) are modified after the drying process and it is almost impossible to see the states of such characters in dried specimens. Thus, in order to observe the states of these two characters, it is necessary to observe the plant *in situ*. Aranha Filho et al. (2007) described the stamen orientation and anther color based only on two populations of *S. falcata*: one in Camanducaia (state of Minas Gerais) and one in Caparaó (state of Espírito Santo).

Mining, metallurgical industries, and urban expansion (among other activities) play an important role in the environment degradation of the region of Ouro Preto, especially in deforestation and contamination by toxic products (Teixeira 1983; Pimentel et al. 2003; Varejão et al. 2009). Therefore, the occurrence of *S. falcata* in a state park helps to protect the only population so far known outside the *Serra da Mantiqueira* and *Serra do Mar* complexes.

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